

What is claimed is:

1. A liquid crystal display panel including a liquid crystal layer sandwiched between transparent first and second substrates, and a plurality of segment electrodes on said first substrate and an opposite electrode on said second substrate respectively, and performing a display by a change in a state of transmission, scattering or absorption of light which is made incident on said liquid crystal layer, caused by selectively applying voltage to said liquid crystal layer by means of said segment electrodes and said opposite electrode, wherein an auxiliary electrode is provided around said each segment electrode on said first substrate with a slight gap intervening between said segment electrode and said auxiliary electrode, said auxiliary electrode is formed of same transparent conductive film as that of said segment electrodes, and wherein an overlap between said opposite electrode and said segment electrode forms a pixel area, and an overlap between said opposite electrode and said auxiliary electrode forms a background area.

2. A liquid crystal display panel according to claim 1, wherein a plurality of segment electrode terminals for individually applying external signals to said plurality of segment electrodes, and wiring electrodes for connecting said segment electrode terminals and said segment electrodes respectively are provided on said first substrate, and wherein said auxiliary electrode is provided with a slight gap intervening also between said auxiliary electrode and said wiring electrode, said auxiliary electrode, said segment electrodes and said wiring electrodes are formed of same transparent conductive film, and overlaps between said

Sub
A16

~~opposite electrode and said wiring electrodes also form said background area.~~

3. A liquid crystal display panel according to claim 2,
wherein the gap between said wiring electrode and said auxiliary
electrode on said first substrate is smaller than the gap between said segment
electrode and said auxiliary electrode.

4. A liquid crystal display panel according to claim 3,
wherein at least a portion of said wiring electrode with a gap formed
between said wiring electrode and said auxiliary electrode is a thin wire
electrode portion having a width that is same as or smaller than that of the
gap.

5. A liquid crystal display panel according to claim 4,
wherein said wiring electrode outside an outer periphery of said
background area is a thick wire electrode portion having a width larger than
that of said thin wire electrode portion.

6. A liquid crystal display panel according to claim 5,
wherein a portion of an outer peripheral portion of said auxiliary
electrode close to said thin wire electrode portion protrudes to be close to
said thick wire electrode portion of said wiring electrode to form a gap
between the protruding portion and said thick wire electrode portion, which
is smaller than a gap between the protruding portion and said thin wire
electrode portion.

7. A liquid crystal display panel according to claim 6,
wherein said thick wire electrode portion of said wiring electrode has
a connection side portion for connecting said thin wire electrode portion and
said segment electrode terminal and an extending portion extending to the
opposite side to the portion, and a gap between the protruding portion of said

auxiliary electrode and said extending portion is smaller than a gap between the protruding portion of said auxiliary electrode and said connection side portion.

8. A liquid crystal display panel including a liquid crystal layer
5 sandwiched between transparent first and second substrates, and a plurality of
segment electrodes on said first substrate and an opposite electrode on said
second substrate respectively, and performing a display by a change in a state
of transmission, scattering or absorption of light which is made incident on
said liquid crystal layer, caused by selectively applying voltage to said liquid
10 crystal layer by means of said segment electrodes and said opposite electrode,
wherein an auxiliary electrode made of a transparent conductive film
is provided between said each segment electrode and around said segment
electrodes on said first substrate to overlap peripheral portions of said
segment electrodes, and said auxiliary electrode is electrically insulated from
15 said each segment electrode by a transparent insulating film which is
provided between said auxiliary electrode and said segment electrode, and
wherein an overlap between said opposite electrode and said segment
electrode forms a pixel area, and an overlap between said opposite electrode
and said auxiliary electrode forms a background area.

9. A liquid crystal display panel according to claim 8,
20 wherein said segment electrodes are formed directly on said first
substrate, said insulating film is formed on said first substrate and at least on
peripheral portions of said segment electrodes, and said auxiliary electrode is
formed on said insulating film.

10. A liquid crystal display panel according to claim 9, wherein said
25 auxiliary electrode and said insulating film are in same planar pattern.

11. A liquid crystal display panel according to claim 8,
wherein said auxiliary electrode is formed directly on said first
substrate, said insulating film is formed on said first substrate within opening
portions in said auxiliary electrode and at least on peripheral portions of said
opening portions in said auxiliary electrode, and said segment electrodes are
formed on said insulating film.

12. A liquid crystal display panel according to claim 11, wherein said
segment electrode and said insulating film are in same planar pattern.

13. A liquid crystal display panel including a liquid crystal layer
sandwiched between transparent first and second substrates, and a plurality of
segment electrodes on said first substrate and an opposite electrode on said
second substrate respectively, and performing a display by a change in a state
of transmission, scattering or absorption of light which is made incident on
said liquid crystal layer, caused by selectively applying voltage to said liquid
crystal layer by means of said segment electrode and said opposite electrode,

wherein an auxiliary electrode made of a transparent conductive film
is provided over the entire region forming pixel areas and a background area
on said first substrate, a transparent insulating film is provided on said
auxiliary electrode, and said each segment electrode is provided on said
insulating film, and

wherein an overlap between said opposite electrode and said segment
electrode forms said pixel area, and an overlap between said opposite
electrode and a portion of said auxiliary electrode without said segment
electrodes forms said background area.

14. A liquid crystal display panel according to claim 13, wherein said
insulating film on said auxiliary electrode is removed at portions where said

segment electrodes are not provided.

15. A liquid crystal display panel according to claim 1,

wherein a plurality of segment electrode terminals for individually applying external signals to said plurality of segment electrodes, and wiring electrodes for connecting said segment electrode terminals and said segment electrodes respectively are provided on said first substrate, and one end portion of each wiring electrode extends to a region where said segment electrode is formed,

wherein a transparent insulating film is provided on said first
10 substrate and said each wiring electrode, and said insulating film has an
opening portion on said one end portion of said each wiring electrode, and

wherein said each segment electrode and said auxiliary electrode are provided on said insulating film, and said each segment electrode and said each wiring electrode are connected through the opening portion in said insulating film.

16. A liquid crystal display panel according to any one of claims 1, 8, 13 and 15, wherein a photovoltaic device is disposed outside said second substrate.

17. A liquid crystal display panel according to claim 2 or claim 15,
20 wherein said wiring electrode has a plurality of holes.

18. A liquid crystal display panel according to any one of claims 2, 15 and 18, wherein said segment electrodes and wiring electrodes are formed of a metal film.

19. A liquid crystal display panel according to any one of claims 1, 8,
25 13 and 15, wherein said auxiliary electrode is split into a plurality of parts.

20. A liquid crystal display panel according to any one of claims 1, 8,

Sub
A17
(cont'd)

~~13 and 15, wherein said opposite electrode is split into a plurality of parts.~~

21. A liquid crystal display panel according to claim 20, wherein gaps between said split opposite electrodes and gaps between said plurality of segment electrodes are provided at different positions in a plane view.

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